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SUMMARY
OF THE
NEWFOUNDLAND
RAILWAY SURVEY,
1875.

BY ALEXANDER MURRAY, F. G. S.



(Printed by order of the House of Assembly.)

ST. JOHN'S, NEWFOUNDLAND.

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SUMMARY OF THE NEWFOUNDLAND RAIL- WAY SURVEY—1875.

TO THE HON. COLONIAL SECRETARY.

SIR :

In the year 1868, the late Mr. WALTER GEORGE BELLAIRS was deputed by Mr. SANDFORD FLEMING to make a cursory examination of this island from east to west, in order to ascertain roughly what capabilities its interior presented for the construction of a railroad—Mr. FLEMING's opinion then being that, were such a line built, it would form an important link in the chain of the intercolonial system, and in the shortest and most direct route to Europe. This expedition of Mr. BELLAIRS was conducted solely at Mr. FLEMING's own personal expense.

Mr. Bellairs' exploration.

Mr. BELLAIRS' instructions were, first, to obtain the most reliable information regarding the character of the harbors on the east and west coast, the positions of which would be favorable as termini; and, secondly, to observe whether or not any insuperable or serious obstacles interposed, on the direct line, between such ports; and lastly, if a railway were practicable, what its length and general direction would be.

Instructions.

On Mr. BELLAIRS' arrival in Newfoundland, he appealed to me for information regarding the interior of the island; and I gladly gave him all that then lay in my power, which will be found quoted in his report; but as at that time my surveys had not extended to the southern and eastern parts—that is, to the south-east of a line drawn from Codroy by the Grand Pond diagonally across the island, the line he was desired to obtain, being unexplored, I was unable to

describe with any degree of confidence. Thus he had to rely upon such information as could be derived from trappers and Indians, as he passed through the country, noting such observations as his time and very limited opportunities would admit.

Mr. Bellairs' route.

The route that was followed on Mr. BELLAIRS' exploration was, for a great part of the distance, along or nearly parallel to the already existing telegraph line, until reaching Grandy's Brook, whence he struck into the heart of the country, and crossed over to St. George's Bay, following, in the latter part of his journey, the valley of Flat Bay Brook. His general summary of the character of the country through which he passed is:—After leaving the peninsula of Avalon until reaching Flat Bay Brook—that which all subsequent exploration has proved it to be—a dreary waste of alternating rocky hills and ridges, with widespread barrens and marshes, intersected by innumerable foaming torrents, which, rushing through deep-cut, precipitous gorges, flow tumultuously into the many fiords and inlets which indent the southern shore. Nevertheless, Mr. BELLAIRS, while he anticipated difficulties, and the probable necessity of making many curves and deviations from a direct line, perceived nothing that could be deemed insuperable; stating, however, that a preliminary instrumental survey alone could determine the value of the physical difficulties to be encountered, the absolute mileage of the road, or the capabilities offered for construction.

Difficulties.

Initiation of a preliminary instrumental survey.

Early in the year 1875 the Government of Newfoundland came to the conclusion that an instrumental preliminary survey should be immediately instituted, to determine, once for all, the capabilities of the country for railway construction, from the eastern to the western shores; and an act was passed, during the legislative session of the same year, enabling the Government to proceed with the work. In the meantime a correspondence was held with SANDFORD FLEMING, Esq., C.E., Engineer-in-chief of the

Correspondence with Mr. Sandford Fleming.

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Canadian Pacific Railway, and he was invited to superintend the operation, and to appoint a corps of engineers, who should be instructed to make every effort to complete the survey within the year. Mr. FLEMING, without hesitation, offered his gratuitous assistance in furtherance of the object in view, allowed himself to be named consulting engineer, appointed a staff to perform the work, and expressed his intention, if possible, to inspect the initiation and completion of the survey. The latter part of the programme Mr. FLEMING was unable personally to fulfil: his many engagements, in connection with the Canada Pacific and other important public works, absorbing all his time and attention; but he deputed as a substitute ALEXANDER L. LIGHT, Esq., C.E., a well known and experienced engineer, to act in his stead—one who has earned a most favourable reputation, as being the constructor of a large portion of the Intercolonial Railroad, which is generally acknowledged to be nearly, or altogether, the most perfect road on the continent of North America.

Mr. A. L. Light.

As, during my geological investigations, between the years 1868 and 1875, I had made many extensive surveys of the interior, by means of following up the great leading arteries and keeping up a system of triangulation from the most conspicuous heights, to harmonize and connect the whole work, I was consulted by the Government, and subsequently by Mr. FLEMING, and asked to state my views regarding the general direction to be followed by the engineering parties; and also to describe, as far as my experience would permit, the probable character of the country, and the line I should suggest, would pass through. I accordingly drew up a plan upon my small scale geological map, dividing the whole line into nineteen sections or parts, with written memoranda of each section, concluding with remarks regarding the bringing forward of supplies. These data were immediately forwarded to Mr. FLEMING; and these with some modifications have been the basis on which the

Investigation
of the Geolo-
gical Survey.

Mr. A. Mur-
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Appointment
of a corps of
engineers.

Preparations
for the sur-
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The interior
of the coun-
try to be first
surveyed.

The termini.

Three parties
of surveying
engineers.

work proceeded and has since been accomplished. Mr. LIGHT accordingly proceeded from Quebec, accompanied by a corps of engineers, early in May last; but owing to the state of the Newfoundland coast—which was at that time so blocked up with ice that the Atlantic steamers were unable to reach St. John's—he was detained over a fortnight at Halifax, and did not reach this place until the 19th of that month. Immediately on landing, Mr. LIGHT proceeded to this office, becoming a guest of my house; and from the same date until the 7th of June we were both incessantly occupied in discussing the routes to be followed, the difficulties to be encountered, especially in the commissariat department; drawing out instructions, selecting men for the parties, equipping tents, testing instruments, &c. Arrangements completed, the last of the parties left this on the 7th of June.

After due consideration, it was determined that the survey of the interior should be accomplished during the summer months, as the whole length of the line, from end to end, to be passed over was known to be an uninhabited wilderness, and where there would obviously be many difficulties in bringing up supplies, reserving the survey of the Peninsula of Avalon for the operations of autumn, or even, if necessary, of the earlier winter months; as in any portion of that country the parties would be comparatively near to settlements, and within reach of their base of supply.

The extreme termini of the proposed survey were at St. John's harbor on the east, and at St. George's Bay, on the west coasts; and the primary operation resolved on was to run a connected line between Come-by-Chance, at the head of Placentia Bay, and the Seal Rocks, at St. George's harbor. The corps of engineers was accordingly divided into three parties, which were respectively distinguished as sections or divisions A, B, C. In determining the routes to be taken by the different parties, Mr. LIGHT modified the directions given in my plan, by connecting the extreme points

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upon the map by straight lines, which were to be followed, as near as circumstances would permit, by the surveying engineers. Thus section A was to run from the Seal Rocks, at St. George's harbour, towards the entrance of St. George's River, at the extreme head of St. George's Bay ; and thence, nearly on a parallel of latitude, between $48^{\circ} 31'$ and $48^{\circ} 32'$ north, to the extreme head of the Red Indian Lake. Section B was to run from an established point where section A would terminate at the head of Red Indian Lake, and to follow, nearly on the same parallel of latitude, to the Gander River. Section C was to commence at the most convenient place for entering into the isthmus of the peninsula of Avalon, near the Come-by-Chance river, and thence bear, as nearly as practicable, in a straight line, for the point indicated on the Gander, as the eastern termination of section B.

The officers of the parties were thus subdivided:—

SECTION A.	SECTION B.
Mr. THOS. RAMSEY, <i>Chief.</i>	Mr. W. A. AUSTIN, <i>Chief.</i>
" W. A. RAMSEY, <i>Transitman.</i>	" WM. QUINN, <i>Transitman.</i>
" B. N. LIGHT, <i>Leveller.</i>	" A. G. MORRISON, <i>Leveller.</i>
" J. H. LOVELL, <i>Topographer.</i>	" J. J. MORRIS, <i>Asst. Transit.</i>

SECTION C.

Mr. F. J. LYNCH, <i>Chief.</i>
" J. CADMAN, <i>Transitman.</i>
" W. C. MITCHELL, <i>Leveller.</i>

The distances to be traversed in an air line were nearly as follow:—

	M. C.
On Section A, say	60.40
" " B, "	80.00
" " C, "	84.00
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Distances
 through the
 interior.

But following the actual courses run, these were much increased ; and probably, on the whole, the measured distances may be assumed, in round numbers, to amount to nearly 250 miles. The rate of grade given in Mr. LIGHT's instructions was, if practicable, to be confined to 1 in 100.

Appointm'ts.

Each party had an appointed gang of from 25 to 30 men all told, consisting, besides the instrumentalists, of a foreman, chain bearers, a few Indian guides, and general laborers, and provided with all the necessary stores requisite for a campaign of three months, together with canoes and material for the construction of temporary boats, rafts, &c.

Mr. Ramsey's party.

On the 2nd of June the party under Mr. RAMSEY was despatched by the steamer *Hercules* for St. George's Bay, where it was safely landed on the 5th. The labors of the survey commenced rather inauspiciously on the same day—a boat containing their tents, provisions and other articles, getting swamped at the entrance of "the Gut" (a very dangerous place always), when some of the stores, but fortunately no lives, were lost.

Commence-
ment of Sur-
vey Division
A.

Survey of Di-
vision A.

Mr. RAMSEY then, after cursorily examining the ground, took his departure from the tide marks, near the outlet of St. George's River, leaving the interval between that point and the Seal Rocks—which was comparatively easy ground—to be surveyed on his return to the coast. His traverse then followed generally up the valley of the St. George's River until he reached the water-shed between it and some of the minor tributaries of the Exploits, which, having crossed, he descended the slope on the south-east side to the bed of that river, touching it at the base of the Red Indian Lookout, between seven and eight miles above the western extreme of the Red Indian Lake. He reached the latter point about the middle of August, having successfully accomplished his section, without having encountered any insuperable or indeed very serious obstacle throughout. The summit reduced level attained on the culmination of the traverse was 1220 feet; and the reduced level from the same data, at the part struck upon the Exploits River, was 550 feet—or 82 feet above the normal surface of Red Indian Lake. The gorge of the river at this point is precipitous; but a location line can be found on the left bank a little higher up.

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Mr. RAMSEY's staff at this time was weakened by the loss of two of his officers, viz.: Mr. LOVELL and Mr. R. N. LIGHT, who were obliged to return to the coast in consequence of ill-health; but their absence was in some degree compensated by the activity and energy of his foreman, GEORGE LEMOINE, and an admirable gang of men, who worked well and steadily to the end, and returned to the coast in the best of health and spirits. The steamer *Tiger* having been ordered to pick up the party at St. George's Bay, they arrived at Saint John's on October 2nd, when Mr. RAMSEY and his son immediately commenced to reorganise for another expedition on the peninsula of Avalon, to be mentioned further on.

Illness in the
camp.

Mr. RAMSEY describes the country traversed by the line as being about equally divided into alternating tracts of forest and marsh, until reaching the watershed, which is in great part a barren waste, spread over by many fine sheets of water of large size. These latter were found of great service in facilitating the advance of the camp equipage and stores, which were moved for long distances in boats, extemporised for the occasion, ingeniously constructed of a rough frame enclosed in the tarpaulin canvas ordinarily used for the protection of the goods from the weather. There are considerable intervals of good land near the sea-board, between the Seal Rocks and Saint George's River, and also in the valley of that stream itself, where the timber, pine, spruce and fir, in many cases reaches a fair size and appears to be vigorous and healthy. The slope downwards to the Exploits is to a considerable extent barren country, with marshes and patches of wood scattered here and there; but the lower grounds and banks of the main stream are generally densely covered by forest, amongst which there may frequently be seen pine and other timber of good quality.

Mr. Ramsey's
description of
the country.

Section B, under Mr. AUSTIN, left Saint John's on June 7th, by the steamer *Leopard*, with instructions to proceed up the Exploits River with all possible

Survey of sec-
tion B.

Detention of
Mr. Austin's
party.

despatch to the head of the Red Indian Lake, where this survey was to commence, and where Section A was to terminate. In consequence of the state of the coast, which was at this time greatly encumbered with ice, the party did not reach Exploits Burnt Island until the 16th of June. It then proceeded by schooner to Upper Sandy Point and landed there on the 17th. At this place eight men were engaged for one week constructing two flats to supplement the canoes, which were found insufficient for the transport of the supplies, whilst the remainder of the party, accompanied by Indian canoe-men, at once proceeded up the river with the first instalment of stores. The moving of the commissariat was a tedious process and occupied no less than 28 days, the whole flotilla of canoes and boats being incapable of carrying more than one-third of the material at a trip involving three ascents and two descents of the whole length of the river, including the lake, a distance altogether of 500 miles. Within that time moreover two depots or *caches* were established, one 16 miles up the course of Noel Paul's Brook, the other about 7 miles up the Victoria River, to be conveniently near to the intersection of the proposed line. In consequence of these delays and difficulties the survey was not fairly started until July 22nd.

Survey commenced at
Red Indian
Lake.

Levels and
distances.

On that day Mr. AUSTIN took up his starting point 1000 feet to the westward of the extreme head of Red Indian Lake, and 25 feet above its average level, viz.: 428 feet. This datum was taken from my estimate on the survey of the Exploits in 1871; but the reduced level brought up by Mr. RAMSEY from St. George's Bay places the surface of the lake at 468 feet, consequently making a difference of 40 feet in Mr. AUSTIN's reduced level all along the line. Allowing for this difference the altitude attained at $6\frac{1}{4}$ miles would be 810 feet: eastward of which the traverse runs upon level ground, varying in height above the sea between 800 and 990 feet, till reaching $20\frac{1}{4}$ miles, or about 5 miles eastward of the Victoria River, after

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which it rises, and at 26 miles the height is 1076 feet. At 41 miles the maximum height was attained, 1229 feet, near Noel Paul's Brook, beyond which the descent was gradual to the Great Rattling Brook at fifty-one miles, where the reduced level was 1015 feet. The descent then continues all the way to the Gander, which is reached at eighty-five and a half miles, with a reduced level of 412.50 above the level of the sea.

For about fifty miles, or between the commencement of this section till reaching the proximity of Great Rattling Brook, the country proved to be a continuation of dense forest, with a few insignificant intervals of swamp or marsh, the course running nearly parallel, or slightly oblique, to the ridges, which, in common with the topographical features of the country, generally run about north-east and south-west. Beyond the Great Rattling Brook the country opens out into a succession of rolling barrens, with occasional scattered woods of stunted growth, the surface of the ground strewn with innumerable boulders, many of enormous size, being sometimes observed to reach upwards of forty feet in perpendicular height; and this character obtains to a greater or less degree to the end of the section.

Forest lands.

Huge bould-
ers.

The wooded country west of the Great Rattling Brook contains a large amount of valuable timber, consisting of pine, spruce, tamarack, yellow and white birch. There are also, in smaller proportion and smaller size, cherry, mountain ash, maple, and a variety (I believe) of sycamore, known on the continent as moose wood.

The pine trees observed on this part of the line, especially near the Victoria River and Noel Paul's Brook, are described as frequently being very numerous, of good size and of vigorous growth. I am informed by persons of experience who were on the expedition that the pine over large areas would give an average diameter of over two feet, and that the spruce, although generally inferior to the con-

Valuable tim-
ber.

tinental spruce for sawing into boards, was of the very best quality for shipbuilding purposes. Tamaracks of the larger or higher qualities are not so plentiful; but many sticks were seen of large size and of the best possible description, some reaching a thickness of upwards of two feet, while in some exceptional instances the diameters were found to be three feet.

Survey of section C by F. J. Lynch.

Section C, in charge of F. J. LYNCH, Esq., C.E., left St. John's on the 7th June, by schooner *Voyager*, with a working party of about twenty-five men, for Heart's Content, Trinity Bay, where the officers of the staff, MESSRS. CADMAN and MITCHELL, joined them, having been sent overland in advance by Harbor Grace. Thence they proceeded to Bay Bulls Arm, where they landed with all their stores and equipage on the 10th of June.

Choice of lines.

Having finally made all necessary preparations for the ensuing campaign, the datum of levels was taken from H. W. M., Trinity Bay, and a traverse run across the isthmus to Come-by-Chance in Placentia Bay. On this traverse the height of land was found to be two hundred and fifty feet. In accordance with his previously received instructions, Mr. LYNCH chose a point of departure at one hundred and sixteen feet above H. W. M. in order to suit the southern section intended to enter the peninsula of Avalon. Had no such requirement been necessary, Mr. LYNCH would have chosen a point lower down in the valley of Come-by-Chance brook, as likely to give a better line. The banks of the Come-by-Chance were found to be sufficiently flat for the location of a railway; and were traced upwards for about nine miles to a lake from three hundred to six hundred feet wide, and a mile long. The line of survey followed the watershed between Trinity and Placentia Bays, to avoid the steep slopes of the hills, till obliged to descend and cross the Come-by-Chance brook at the foot of the rapids below the lake at a reduced level of one hundred and

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seventy-seven feet. The line then skirts the western shore of the lake for about a mile, rounding off to the westward at the foot of the Powder Horn hills, till the divide between the North Harbor and Come-by-Chance is reached at station 500; reduced level two hundred and thirty feet. Up to station 500 the line followed nearly in the direction indicated by Mr. BELLAIRS; but Mr. LYNCH, after having made a detailed examination of the Powder Horn, North Harbor, and Pipers' Hole ranges of hills, found it necessary to deviate from Mr. BELLAIRS' line of route, and to strike to the northward in order to attain the passes through the North Harbor and Clode Sound hills. The watershed of North Harbor and Random was reached at station 740, fourteen miles from the commencement; reduced level four hundred and thirty feet, not more than four miles from the south-west arm of Random. Here commences the ascent proper of the North Harbor hills, the summit being reached with grades chiefly of one in a hundred at station 1050; reduced level seven hundred and ninety-five feet. The descent of the west side was found objectionable, and an alternative and an improved line was found by falling back to station 894, and rising the hills on the Random side of the divide, to reach the summit pass at station 1045—reduced level 735 feet—which effected a saving of over four miles in length and sixty feet of a rise; but to do this a grade of sixty feet to the mile was required throughout. Mr. LYNCH thinks it possible that a line with easier grades may be found by crossing the watershed at station 740, following the Random side by making a double or S curve, and joining the last line described at station 1000.

Mr. LYNCH describes the valley of the Come-by-Chance and the slopes of the Powder Horn hills as being well wooded at many parts, the timber consisting of spruce, tamarack and white birch; and the same character applies to the country between the Powder Horn and Black River hills; but towards the North Harbor hills the ground is hummocky,

Deviation
from Mr. Bel-
lairs' line.

Improv'd line

Valleys of
Come-by-
Chance and
Powder Horn
Hills.

Desert country.

spread over by many ponds and marshes, with rocky peaks here and there breaking the desolate monotony of the scene. The surface at many parts is well covered with stunted scrubby trees, and is generally strewed over with boulders. Between stations 500 and 1045 the country is devoid of soil, supporting only a deformed and scrubby growth of dwarfed timber, with peat resting on the naked rock. A little grass grows in the brook bottoms, the beds of the same being gravelly.

Descending the North Harbor Hills, with an easy grade, the Black River Lake is passed on the north side at station 1280; reduced level 593 feet. From Black River Lake the line runs between it and Tit, or Upper Black River Lake, and, skirting the latter on the south side, the summit of the Clode Sound Hills' Pass is reached at station 1401—reduced level 638 feet—through a very favorable country. The descent to the south-west branch of the Clode Sound River, near station 1528—reduced level 510 feet—is then made, with a grade of 1 in 100 for $2\frac{1}{2}$ miles, on a spur of the main hills and through somewhat heavy woods, consisting of spruce, tamarack and birch. Both north and south of the summit pass, and to the north of Black River Lake, the country is very rugged and precipitous, peaks to the north rising to a height of 1200 feet and forming a divide between the waters of Random in Trinity Bay, Clode Sound in Bonavista Bay, and Black River in Placentia Bay. To the south the peaks rise to about 1000 feet, and at but a short distance the hills divide into the North Harbor and Black River ranges. The length of the measured line to station 1401 is about twenty-seven miles, though it is only eighteen miles on an air line. Shortly before reaching station 1528 the hill country, through which the line hitherto passed, changes to the more uniform though by no means more level, rolling marshes and barrens of the interior. From stations 1503 to 1800 the line runs through a very level country, chiefly of marshes and barrens, with many small ponds and

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Provisions
run short.

From station 1800 the line was taken over a sharpish rise to station 2010 on the summit of the Bear Ridge, the water-shed between Clode Sound and Pipers' Hole, at a reduced level of seven hundred and fifty-four feet; but a good section, with easy grades, is to be found further to the south by a pass. From station 2010 to 2670 the section is easy to the Part-ridgeberry Hills; the reduced level of the latter station being seven hundred and sixty-five feet; and forward still to station 3800 gives a most favorable profile, terminating at reduced level seven hundred and thirteen feet. The line at this latter part passes near the great lake known to the Indians as Meelpegh, and the waters of the Terranova River, station 3760—reduced level six hundred and sixty feet—reaches the bank of the south branch of the Terranova, the largest stream crossed on the section. The ascent of the second Bear Ridge is then made to station 3920—reduced level eight hundred and sixty feet—the continuation of the ridge to the northward being very rough and irregular. At station 4305—reduced level six hundred and seventy-two feet—the north branch of the Terranova River was crossed, rising immediately afterwards up the Middle Ridge, where the work was unavoidably stopped at station 4500, and at a reduced level of nine hundred and ninety-four feet. The region towards the Gander River presented an improved aspect, more especially in the growth of timber and the absence of the innumerable ponds hitherto found on the line; those seen being of more extended areas. Had the line been continued one hundred feet further down, a valley would have been crossed to the south

of a large lake, the water from which flows into the Gander River.

Ridges, tributaries of the Gander River.

The next ridges in succession are the two Wigwams, with their intermediate valley, containing Great Gull Pond and river of the same name, which flows to the northwest, and also falls into the Gander. The westernmost of these ridges, at its northern extremity, joins with the Berry or Drogue Hills; thus forming a fork from which a stream flows to the south-west, and finally into the Gander. The line, had it been continued, would have run south of the Wigwam ridges and followed a south-westerly course along the stream last alluded to, and would finally have tapped the main Gander River.

Proposed divergence of line run.

It appears to me, and Mr. LYNCH's experience seems to corroborate the same view, that the line should diverge to the northward after getting through the Clode Sound Hills, where the ground seems to be in every respect more favorable, first, for construction, and, secondly, as regards the nature of the soil; and thence to reach the head-waters of the Gambo and tributary streams of the Gander, thus avoiding the necessity of crossing ridges and saving the consequent local deviations which were found necessary on the air line.

Difficulties in carrying the stores.

In the foregoing account I have gone into more minute detail in describing Mr. LYNCH's section C because, in reality, the district he had to encounter presented more formidable difficulties than any other part of the whole line. The chief of these difficulties, and indeed all the trouble and annoyance which followed, laid in the forwarding of the commissariat. The total weight of the inertia at starting amounted to 15,000 lbs., all of which had to be carried on men's backs. Mr. LYNCH was not supplied with canoes, and even if he had been, they would only have been an additional weight to carry over a great part of the route. Again, much of the route traversed a country so covered by ponds and lakes that one-third of the whole area appeared to be of water, which necessarily

flows into the

two Wigwams, and Great Gull which flows to the west. The western extremity, joining forming a fork west, and finally continued, bridges and following the stream last crossed the main

his experience that the line getting through and seems to be for construction, of the soil; and the Gambo and avoiding the the consequent necessary on the

one into more his section and to encounter than any other these difficulties, which followed commissariat. ing amounted carried on men's with canoes, and have been an great part of the crossed a country ne-third of the which necessarily

had to be crossed or followed around; but the former proceeding was impracticable for want of material to construct rafts, while the latter alternative, being unavoidable, entailed excessive labor. On an average the line work had to be stopped for two days in each week to allow all hands to be employed packing and bringing forward the supplies; and the men, being unaccustomed to the work, gradually became exhausted, and many fell into the sick list, some of whom, being too ill for service, had to be sent out to the coast with an escort. Thus the services of from four to five men were lost altogether for several days at a time. I have already stated that provisions began to fall short on the 2nd day of August, and would probably not last beyond the 24th of that month. This danger being imminent, the laborers broke out into almost open mutiny, which was only overcome by the personal presence of Mr. LYNCH who, by patience and conciliatory measures, succeeded in restoring order.

Difficulties in getting forward the supplies.

He established small depots of provisions along the line of march, to be ready in case a retrograde movement became absolutely necessary, and he sent an Indian out to the telegraph station at Black River with a message to head-quarters, to send on more supplies. These supplies were at once forwarded; but, owing to some mistakes in the manner in which they were transported, and the inefficiency of the men employed to carry them, they were of little avail, a great portion of the much-needed supplement being consumed before reaching the camp.

As already hinted, some individual instances of turbulence and dissatisfaction occasionally manifested themselves in Mr. LYNCH's party, which also tended to retard the work; but some allowance must be made for the men being unused to such operations, so much so that they were at times on the point of breaking down altogether.

Trouble with the men.

During the whole time, and under many difficulties and discomforts, the instrumental work was carried

Mr. Lynch's assistants.

on steadily and skilfully by Mr. LYNCH's assistants, Messrs. CADMAN and MITCHELL, whose conduct throughout is most highly to be commended.

Mount Syl-
vestre.

On his homeward route, Mr. LYNCH crossed over to Mount Sylvestre (of Cormack), which he ascended, and had a splendid view of the surrounding country from its summit.

General char-
acter of the
region.

The general character of the region he describes as consisting of immense tracts of marsh and barrens, interspersed by innumerable lakes and ponds, in all respects resembling the country traversed by the surveyed line. He reached Black River on the evening of the 14th of September, where he was rejoined by the remainder of his party on the following morning. They proceeded thence by boat to Great Placentia, where they found conveyances to carry them to St. John's by road, arriving there on the 21st of September.

Return to St.
John's.

Mr. J. P. How-
ley's survey.

Before reviewing the progress of the survey through the Peninsula of Avalon, I consider it necessary to give an outline of a survey made under my direction by my assistant, Mr. HOWLEY, of the upper waters of the Exploits River, as bearing upon the facilities offered for railway construction towards the southern shores of the island.

Mr. HOWLEY was instructed to proceed with all possible despatch to the Exploits, to ascend that river to the Red Indian Lake, and then to take up certain points indicated where my survey terminated in 1871, and trace the upper waters as far as practicable; to ascend all the most conspicuous heights and connect the surveys of former years by triangulation; and, finally, to cross over the region which lies between the sources of the Great River and the southern coast towards Lapoile or some other favorable harbor.

While Mr. HOWLEY's survey was thus essentially in furtherance of the geological investigation; he was enabled and instructed to render occasional aid to the railway engineers; and finally to observe and roughly to estimate the probable feasibility of carrying a line

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He found the continuation of the river above Red Indian Lake to consist of two main branches, running nearly parallel to one another—the Exploits proper and the Victoria branch—which pointing remarkably straight in a south-westerly direction, finally terminate in a labyrinth of interlocking waters which flow to the south and to the west. From the water-shed, the sources of the Great Codroy and the streams of St. George's Bay were described on the one hand, while the waters of the Lapoile, the Great Bear Bay and Grandy's Brook were respectively observed on the other. At the end of sixteen miles from Red Indian Lake the Exploits proper expands into Lloyd's Pond, which is six miles long by an average of three-quarters of a mile broad, and again into George 4th's Pond (of Cormack), at forty miles above the same lake. The Victoria branch, which enters the Red Indian Lake about four miles above the outlet, expands at the end of forty-eight miles into Victoria Lake, a splendid sheet of water, above which the river continues for a vast distance, and finally terminates, interlocked with the south falling streams.

The height of Lloyd's Pond was found by aneroid to be 620 feet above H. W. M. The height of King George 4th's Pond was 1237 feet, and that of Victoria Lake 1160 feet above the sea. The summit level attained on the traverse of the water-shed was, by the same means, found to be about 2000 feet. From a little distance above the point where Mr. RAMSEY'S section A struck the Exploits to King George 4th's Pond, Mr. HOWLEY represents the left bank of the river to be generally level, tolerably well wooded and favorable for railway construction; and he is of opinion that although there are some obstacles to be encountered in getting around some of the hills surrounding the said lake, that these are not by any means insuperable, and that after having crossed over to the eastern side of the main river a tolerably level plateau

Two great
branches of
the Exploits
River.

Lloyd's pond.

George 4th's
Pond.

Victoria Lake.

Level coun-
try.

The great highway by the valley of Exploits.

will be found in the region of the eastern sources of the Lapoile, from whence an easy section, probably not over one in one hundred, can be carried downwards to the north-east arm of the Lapoile Bay or Inlet. The distance followed on Mr. HOWLEY's traverse from the main Exploits—twenty-two miles above King George 4th's Lake—to the northern extreme head of Lapoile Inlet, is twenty-five and a half miles; but on an air line it does not exceed twenty and a half miles. My own observations, together with the results of the survey, of which the above is only an imperfect sketch, convinces me that the great highway to the western regions of Newfoundland is to be found by the valley of the Exploits, and that connection, by railway or other roads, is only really practicable or expedient by that route, whether the terminus may be at St. George's Bay, on the southern coast, or at both. With the exception of a portion of Mr. LYNCH's section C, which is susceptible of considerable modification and improvement, the whole line passes over, or very close to, available land capable of supporting a large population and containing many wide tracts of fine timber. It crosses, moreover, a considerable area which, there is every reason to believe, will prove to be of mineral value; and, by terminating at St. George's Bay, it leads to a place which might and ought to be the nucleus of a large settlement.

SURVEY OF THE PENINSULA OF AVALON.

Mr. Light prevented from returning to inspect the work.

In consequence of certain changes in connection with railway matters in the Dominion of Canada Mr. LIGHT was prevented from fulfilling his intention of revisiting Newfoundland in autumn, for the purpose of reorganizing the parties for the survey of the Peninsula of Avalon, and of personally inspecting the surveys accomplished in the interior. I therefore was requested by Mr. FLEMING to assume the temporary superintendence of the survey operations, and to report progress. Accordingly, on my return from

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special mission with which I was entrusted by the Government to Notre Dame Bay, I made arrangements for the return of the parties from the interior, and then reorganised for an autumnal campaign.

Mr. LYNCH, with the C division, arrived at St. John's on the 21st of September; the men were paid off, and the reformation of a new party immediately commenced, many of the original members volunteering for another term of service. Some unavoidable delay occurred in renewing camp equipage generally, which had suffered much from the rough usage of the previous three months, and the work was not fairly commenced till the 29th of September. The same tents and other equipments were again used, and every device of economy was strictly applied. Previous to the last-mentioned date, I accompanied Mr. LYNCH in casually examining the contour of the ground immediately in the vicinity of St. John's, in order to determine approximately the most favorable position for a terminus and the location of a line.

Mr. Lynch re-organizes his party — Division C.

Mr. LYNCH is of opinion that three distinct alignments are practicable at this terminus, in which grades of one in one hundred would not be exceeded. They are, first, to start at H. W. M., Riverhead, and follow the north branch of the Riverhead Brook as far as practicable, with grades of one per one hundred; then, crossing over, to run around the point of land between the two branches of the same stream, thus gaining considerable in length, and, finally, running up the south branch and joining the line now surveyed at the height of land. Second, to start from a point on the north side of the river sufficiently elevated to enable the height of land on present line to be reached with moderate grades. Third, to start from H. W. M., near the Galway or SHEA'S wharf, running through a low neck into the valley of Quidividi, thence behind the city, and, finally, joining the surveyed line at or beyond the height of land.

Three alignments practicable.

Route of survey.

The final selection from these three lines of route was left for further consideration; but, in order to avoid interference with the more valuable property on the north side of the harbor, Mr. LYNCH ran the preliminary line on the south side, following the south branch of the Riverhead Brook to the height of land. The datum started from was H. W. M. at the Long Bridge at Riverhead, and the height of land was reached at the end of six and a half miles, with a reduced level of five hundred feet, showing this, the most direct route, to be only possible with grades ranging from 1.10 to 1.60 per one hundred, or from fifty-eight to eighty-four feet in the mile.

From this point to Manuel's Brook, station 750, an easy section with good grades was obtained, followed immediately by a grade of 1.20 per one hundred for one mile and a half; but this could be reduced by keeping further to the north.

Water-shed.

At station 1138 a divide is crossed at an elevation of seven hundred and sixty-three feet, and shortly after, at station 1205, the water-shed of Conception and Witless Bays is crossed at a reduced level of seven hundred and twenty-five feet, a favorable section and good grades being obtained.

Water-shed at the Hawk Hills.

At station 1340 another summit is reached at an elevation of eight hundred and sixteen feet. From this point the country gradually assumes a more broken and rugged aspect as the Hawk Hills are approached and rounded, and the water-shed of the Holyrood streams reached at station 1740. These Hawk Hills are an isolated range about one thousand feet high, with three peaks rising to about eleven hundred feet and extending about six miles in length. The country beyond this last point was found to be the most difficult in the district, but several routes appear to be available, the special merits of each of which can only be ascertained by actual survey of each.

The line actually run descends rapidly on the western slope of the Hawk Hills, chiefly on steep sideling ground, and with a grade of sixty feet to the

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mile—it being necessary in following this route to make a complete sweep at a certain point where a lateral range occurs—to gain the natural slope of the country. This grade of sixty feet to the mile is of about two miles extent, easier grades being adopted as soon as the slope of the Hawk Hill is left.

At station 1970 the Big Holyrood River is crossed at an elevation of three hundred and seventy feet, a descent of three hundred feet being made in about four and a half miles, and the most difficult part of the line is past.

Beyond this the chief obstacles to the survey were the numerous ponds, many of large size and of considerable depth. The profile, now in many cases heavy in this neighborhood, can no doubt be materially lightened by judicious location, though at the cost of its length. The Holyrood and Salmonier road is crossed near the eighth mile post at station 2220 and reduced level four hundred and ninety feet.

From this point to the place of junction with Mr. RAMSEY'S survey, at station 2666, the numerous ridges run at nearly right angles to the line, which, together with the many lakes, gives a heavy broken profile, though favorable for construction, the breaks being in all cases short. On the present alignment two short tunnels would be necessary, one of six hundred feet, the other two thousand feet in length; but the longer of these could be much reduced in length, or avoided altogether, by a detour to the north.

The rock of the country is either slate, granite or gneiss, and gravel can be abundantly procured from back of Holyrood to the termination of the line, at the junction of division A with Mr. RAMSEY.

There are tracts of good land throughout, except in the neighborhood and east of Cochrane's pond, (where the country is burned) and adjacent to the high land on the Witless Bay line. The best quality of timber was observed to be through a tract, about ten miles long, westward from the west side of Cochrane's pond, which is there interrupted by the barrens of the Hawk

Big Holyrood
River.

Obstacles.

Salmonier
road.

Junction with
Mr. Ramsey
—A section.

The rocks.

Good land.

Hills, but improves again after passing that range and is particularly good on the west side of the Salmonier Pond. On Manuel's brook fine intervals exist composed of a rich dark soil, now covered with a luxuriant growth of weeds.

Numerous
ponds.

Mr. LYNCH remarks, that "the numerous ponds offer no serious obstruction to the building of a railway, as they are so situated in the majority of cases as to admit either of draining wholly or partially at a very small expense. Moreover, the streams connecting them are usually of the smallest dimensions; and where lakes would be crossed by embankment, a culvert of small size at one side would suffice. No expensive structure would be required on this division the largest stream to be bridged over being Manuel's brook, for which sixty feet would be ample; the River and Colinette River being crossed high up the courses, smaller structures still would be necessary.

Weather during
the progress of the
survey.

The junction with Mr. RAMSEY's survey was effected on the 3rd of December; and during nearly the whole time, from the day of commencement (29th September) till that date, the party were exposed to most unfavorable weather for their operations. Heavy rains and gales of wind continued in rapid succession, till replaced by sleet and snow; fogs were constant and thick and much interfered with the exploration. Fortunately severe frost set in during the latter half of November, closing the ponds and greatly assisting the work and when the junction was affected with section 2 there was from eighteen inches to two feet of snow upon the ground, travelling through which was exceedingly laborious.

Messrs. Cadman,
Mitchell
and Lovell.

Mr. LYNCH concludes his report to me in the highest terms of approbation of the conduct of his two assistants, Messrs. CADMAN and MITCHELL, who, he says with untiring zeal and unflinching persistence, use every effort for the speedy completion of the work under great climatic disadvantages. Of Mr. LOVELL also as topographer, Mr. LYNCH speaks most favourably in every respect.

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Section A, under the control of THOMAS RAMSEY, Esq., C. E., arrived at St. John's on October 2nd, as already stated in a previous part of this report. The party were quickly reorganised and ready to commence their labors about the 7th of the same month.

Conformably with some suggestions made to me by Mr. FLEMING, I directed Mr. RAMSEY to explore the middle section of the Peninsula of Avalon, commencing a few miles inland from Chapel Arm, Trinity Bay, and thence to run northerly towards the La-Manche mine, where some difficult country was anticipated. He was then directed to retrace his steps to the place of commencement, and to work southerly, rounding the conspicuous hill known as Spread Eagle Peak; and finally to shape his course towards the forks of the Rocky River, near which river, I anticipated, sections A and C would join. The party accordingly was despatched to Brigus and Bay Roberts, by road to Portugal Cove, and thence by the steamer *Lizzie* across Conception Bay. Carts having been procured at Bay Roberts, the party, with all the necessary equipments, were taken across to New Harbor in Trinity Bay, and thence to the telegraph station at Chapel Arm in boats; a canoe and a depôt of provisions having been deposited in the meantime at Brigus, as contingent against requirements as the work approached completion. This programme was carried out in its entirety, excepting that, after crossing the Dildo River of Trinity Bay on his southern line, Mr. RAMSEY found it expedient to make a somewhat easterly detour, and to move through the Hodge-water country, and to the northward of Ocean or Big Barren Pond. The parties A and C met, as has already been stated, on the 3rd of December, having thus completed the appointed sections very satisfactorily. The party arrived at St. John's on December 5th, and the remainder of the time, until the announcement of the arrival of the mail steamer *Caspian*—by which the engineers were to return to the Dominion—was so fully occupied in arranging with the men and

Arrival of section A at St. John's, and recommencement of survey in Avalon.

Return of section A.

making general settlements, that I had little opportunity of examining the details of the section, further than by cursorily glancing over the field notes and drawings. From what I could gather in conversation with Mr. RAMSEY on the subject, no serious obstacles were encountered anywhere, and a great part of the line, especially between the valley of the Dildo River and the Hodgewater, passes over a level country, in many parts heavily timbered, and generally of a fairly productive soil. There are extensive marshes between the Dildo River and the waters of Chapel Arm; but these might, in many parts, be utilized and portions effectually drained and made available as grazing grounds.

Provisions
and instructions
sent up
the Gander
River.

SECTION B. About fifteen miles of the latter part of section C having been unavoidably left incomplete as it approached the Gander River—as has already been stated—and a connected survey was in all respects most desirable, I suggested that a store of provisions should be sent, by way of Fogo, to be forwarded up that stream to meet Mr. AUSTIN, with a letter of instructions to that gentleman to cross to the eastern bank of that river after he had reached his terminating point, and to continue his line until he joined the place on the Partridgeberry Hills where Mr. LYNCH was forced to retrograde. This was done accordingly, and the goods, together with my letter of instructions, were sent on by the steamer *Leopard* to J. FITZGERALD, Esq., J. P., of Fogo, on 20th September. Mr. FITZGERALD most promptly used every effort to accomplish the desired object by at once engaging men and boats to ascend the Gander, intrusting the letter of instructions to an Indian, who was to ascend the river after having stored the supplies, and, if possible, meet Mr. AUSTIN's party before it reached the point indicated for its termination. This expedition failed in its object almost entirely from the inclemency of the weather, which prevented the possibility of the goods being taken to their destination in Gander Bay, thence to proceed up the river

before the 27th of September. In the meantime another expedition was attempted to intercept Mr. AUSTIN, by sending Mr. COSTIGAN with a very trustworthy Indian, JOHN BARRINGTON, to go back upon Mr. LYNCH's line, and beyond, until they struck the intersection of the Gander; at the same time sending on a store of supplies to Black River Telegraph Station, to be in readiness to meet the party as it emerged from the interior. This expedition was taken round to Placentia Bay by the surveying steamer *Gulnare*, and was safely landed at Black River on the 23rd of September, when Mr. COSTIGAN and his companion at once started on their errand. They succeeded in coming upon the party on the 2nd of October, but too late for the accomplishment of the object in view, as Mr. AUSTIN was then in full retreat to the coast by way of Bay D'Espoir, his men being shoeless and almost destitute of clothing, with but a limited supply of provisions left. A telegram from Conne River, dated October 6th, announced the arrival of the party at Bay D'Espoir. The steamer *Cabot* was immediately engaged to proceed to Gaultois, where Mr. AUSTIN was instructed to meet her and at once return to St. John's. The *Cabot* left on October 7th, but from stress of weather, or some other cause, she only arrived at Harbor Briton on the 14th of that month, where, however, she was met by the party, it having come round from Gaultois by a sailing vessel. On the 15th the *Cabot* arrived at St. John's and the party was landed. A reorganization was at once commenced. From the last-mentioned date until the 28th of October, Mr. AUSTIN and his assistants were busily engaged in making up their field work, plans and sections, and in settling with the men for their first instalment of services. On that date the B division, being fully equipped and reorganized, were despatched by the steamer *Walrus* for Bay Bulls Arm, Trinity Bay, where the survey was to commence and where the party was landed on the 30th of October.

Mr. Costigan
sent back to
intercept Mr.
Austin.

Str. *Cabot*.

Reorganization
of Mr.
Austin's party.

Mr. Austin's
section B sur-
vey of Avalon

Mr. AUSTIN's instructions were to take up Mr. LYNCH's original starting point at the commencement of section C at Come-by-Chance, and thence to run into the isthmus of the peninsula of Avalon in the direction of Bourdeaux Head, keeping near to the Placentia Bay side, until nearing Great Southern Harbor, whence he would have to bear more inland, and find for himself a practicable line through the hills of Lamanche and Rantam. Once a passage was found through these hills, where, I anticipated, there would be considerable difficulty, Mr. AUSTIN was directed to run his line to connect with the northern extreme of Mr. RAMSEY's survey on section A. The party arrived at Heart's Content, Trinity Bay, on the 1st of December, having accomplished the survey most satisfactorily; proceeding on the following day to Harbor Grace, where meeting the steamer *Cabot* on the 4th, it was conveyed to Saint John's on the same day. As Mr. AUSTIN's time was almost entirely occupied on the 5th and 7th in finally arranging with the Government and paying off his men, and it was necessary that he should be prepared to leave Saint John's for Canada by the 8th, I had no opportunity of examining the details of his survey, or of getting more than a few particulars from himself; but I was both pleased and somewhat astonished to find that the country where I had all along anticipated the greatest difficulty would be encountered had been completely overcome, and a good section run without the necessity of constructing a tunnel at any part of the line. The maximum reduced level was four hundred and seventy-nine feet; and the place of junction with section A was, in measured distance, twenty-one and one-eighth miles from Come-by-Chance, and the reduced level three hundred and fifty feet.

Return to St.
John's.

Departure
from New-
foundland.

The mail steamer *Caspian* arrived at Saint John's early on the morning of the 8th of December, and two out of the three parties, viz.: Messrs. RAMSAY's and AUSTIN's, with the assistants, took passage by her to Halifax, on their way to head-quarters at Ottawa;

while Mr. LYNCH and his assistants, with Mr. FLEMING's consent, remained here to finish their plans and sections, and report to me the various details of their explorations.

GENERAL REMARKS.

Thus terminated the preliminary survey for a railroad across the Island of Newfoundland, which has for ever set at rest all further questioning as to the practicability of such an undertaking. With the exception of the small hiatus of fifteen miles on the east side of the Gander, the whole island is connected from shore to shore by actual measurement and level; while the results of Mr. HOWLEY's investigation in connection with former work of the Geological Survey have brought all the leading geographical features into one compact whole, which, in due time, will be accurately drawn out upon a map. An immense amount of most interesting topographical detail was also effected by the engineers, which, when reduced to scale, shall be entered on the map I am now preparing; upon the surface of which any one, so inclined, may with ease and confidence find all the physical characteristics delineated, and a means of acquiring a just estimate of the country's natural resources.

Questions have arisen from time to time, in St. John's and elsewhere, and occasionally found expression through the press, as to, first, the practicability of a railroad being constructed at all, and, secondly, if such is to be constructed, the advisability of following the line now surveyed, rather than a direct line by the southern shore, to terminate at Port-aux-Basques or Cape Ray, and, thirdly, whether local lines of road from bay to bay were not preferable to any direct line of any kind whatever. As I have had more experience than most people, and have made a study of the geography of this island, and whereas it so happens that many or most of the critics who have expressed very confident opinions on the subject have seldom or never been three miles from the coast line,

perhaps a few remarks from one who knows, or ought to know, the facts regarding such matters, may not be considered presumptuous or misplaced.

First of all, then, I desire to shew that the directions indicated for local lines of road are geographically objectionable, and, secondly, that the so-called direct line by the southern shores is a fallacy, both in point of construction and even of actual length, and for the following reasons :—

Every one who has passed along the coast of Newfoundland must have observed the bold, high and rugged nature of the cliffs which present themselves at all parts, but on the southern shores in particular. The exceptions to this character are only to be found on the main leading hydrographical features, such as particularly the Exploits, the Gander and the Humber Rivers, with their estuaries. These and other streams, with their valleys, conform with the general topographical character, as presented by the ranges of hills and the greater indentations of the eastern and western sea-coasts, and they flow over immense distances as they proceed from the general level of the great interior plains. The rivers on the southern shore, on the other hand, which take their origin on the same level as the Exploits, fall within a very limited distance in a succession of foaming cataracts and turbulent torrents into the deeply-cut inlets of the sea, shewing that the rise on the land must be always abrupt and often inaccessible. Now, it requires but very slight engineering knowledge to perceive that, by keeping near to the shores of the great bays, the line of road must, in all cases, cross the ridges at right angles or diagonally, while to cross the streams and estuaries the very *maximum* of bridge and viaduct construction must be required.

In like manner, the so-called direct line, parallel to the southern shore, would be found, if duly followed, to be a succession of precipitous rises and falls for nearly the whole distance, around which curves would be required so constantly as probably to nearly

double the represented distance in an air line, while the innumerable streams to be crossed would involve as great an expense in structural work as would suffice to cover the cost of building the whole road along a valley or upon a height of land. On the other hand, by following the line of a valley or of a water-shed (in other words, keeping off from the coast as much as possible), the higher tracts are reached with easy grades, and the very *minimum* of construction is requisite.

Further, I have it in my power to shew, and will be glad of an opportunity of explaining, to any one curious in the geography of the country, that the only really practicable route to get to the southern seaboard *must be found by the valley of the Exploits*; and the terminus there, as I have already stated, will probably be neither at Port-aux-Basques nor Cape Ray, but at Lapoile. But there are other reasons for not ignoring St. George's Bay as one of the termini under any circumstances—one very important reason being that the harbor there is the most convenient and central of a mineral region. That coal exists in that region is certain, and that it may to some extent be made available, I see no manner of reason to doubt; that the geological character of the country over a vast area, extending to the northward of Bonne Bay, gives promise of the presence of metallic ores, seems well assured; that the Humber Valley contains marbles of nearly every shade of color—some of the saccharine variety vying in purity with the far-famed statuary of Carrara—is well known; and, finally, that there is nothing less than one thousand square miles of country—including the Humber Valley—scattered over the region, in every respect worthy of being reclaimed, I re-assert with confidence, many opinions to the contrary notwithstanding.

Mr. LYNCH's section C certainly passes through a desolate country, chiefly consisting of marshes and barrens for nearly the whole distance, until approach-

ing the valley of the Gander, where it was intended it should join with Mr. AUSTIN's section B. This will be found indicated, to some extent, in my "Report of Progress" for 1869-70. But were this section to be somewhat modified in its course after leaving the Clode Sound Hills—through which a good line has been established—and made to bear in a northerly direction and to cross the Terranova River at an inconsiderable distance above the Terranova Lake, and thence still north into the level country drained by the Gambo and the Gander Rivers, a nearly straight line on a parallel of latitude would thus be followed to St. George's Bay, with a moderate grade throughout, which would either pass through, or skirt close by, a series of fine, heavily-timbered and fertile tracts of country, until tapping the Upper Exploits above the Red Indian Lake.

Mr. RAMSEY's section A goes through more or less of a rugged country between the Red Indian Lake and the head of St. George's Bay; but it is by far the shortest as well as easiest route across the long range of Laurentian Hills, and it terminates finally at an excellent harbor and at a place capable of being the nucleus of an extensive settlement. In Mr. AUSTIN's section B, I have that gentleman's authority for stating that nearly the whole distance from Red Indian Lake to the Gander River is so densely wooded that his party rarely encountered an opening of a mile or even less in extent; and Mr. COSTIGAN, who is an experienced woodman and lumberer, and who travelled over a great part of this central region, states that the pine trees, over extensive areas, are of good size and quality, while the spruce, although inferior in some respects to the continental spruce, is of the very best quality for shipbuilding purposes. Section B also crosses over, or passes directly north of, a country which, judging from its geological character, is likely to prove of importance as a mineral region.—*See my Report for 1871, pp. 15-18, and also my Report for 1870, p. 33.*

As regards climate and the possibilities of agriculture being properly pursued, Newfoundland is not, by any means, so bad as has often been represented. True indeed it is that the eastern seaboard and this (St. John's) immediate part of it, in particular, suffer much from the effects of the cold arctic currents which, ice-laden, pass along their shores; but even here in St. John's the drawbacks of a late spring are greatly compensated by the usually long continuance of fine weather in the fall; which allows barley and oats to ripen well as late as the middle or end of October; and if we may be allowed to judge from the experience of those who have spent much time in the interior (among whom I am one), the rigors of the coast are to a great extent modified there, and fogs are exceedingly rare.

Mr. McLEOD, in his recent report of the timber lands, quotes statistics to shew that the climate of St. George's Bay ranks before that of Nova Scotia, the Province of Quebec or Manitoba, and is second only to that of Ontario, the finest part of the British North American dominions.

Every one, now-a-days, appears ready to admit that the Bay of Notre Dame is destined to develop itself into a great mining region. Supposing, then, that there were some half a dozen such establishments as Tilt Cove and Betts Cove in Notre Dame Bay, the mining population alone would amount to many thousands of souls, to say nothing of horses, cattle and the like. Now, I would ask, is it reasonable or desirable that all this vast accumulation of living beings should be dependant for their supplies, or the very means of existence, upon another country, while most of the essential necessities might be grown at their own doors? There are, beyond all doubt, many places bordering on the great Bay of Notre Dame where oats and barley, turnips and potatoes can be cultivated as well as in any part of Nova Scotia, and grass crops can be raised as well, if not better, as in the most favored regions of the Dominion.

When those regions are more fully developed, connection with St. John's will become an absolute necessity, as may be recognised at this very moment, when communication by sea is utterly impossible. This is evidenced by the recent return of the steamer *Hercules*, in a disabled state, from an encounter with the ice near Cape Freels. She was laden with hay to supply the horses at Betts Cove, and her failure in reaching her destination, in all probability, will involve the destruction of many noble and valuable animals.

I can hardly conceive a more bitter reflection upon the present helpless state of the country than this very instance of a great and important industry being almost paralysed for want of a material which might be raised in unlimited abundance at nearly all parts of the same bay. The extension of a local line of road from Norris's Arm, in Exploits Bay, to tap the railway line near the Gander River, would greatly alleviate, if not absolutely cure, all this; as it would not only give direct means of communication through the island, but would be a strong incentive to emigrants to settle upon and clear up the land.

Finally, were a railroad or indeed any road, once established as a connecting link between the capital and the western shores of the island, and means taken to encourage settlement legally and systematically, those regions which are now only a prey to fire and pillage, and the resort of lawless marauders and smugglers who owe no allegiance nor contribute any revenue to any nation or colony, and whose trade, whatever it may be, passes over to the Dominion of Canada or to the United States of America, would at once become in reality, and not merely in name, an integral part of the colony of Newfoundland, to which nature has evidently designed it should belong. The arguments which have so often and fatally been used against the possibility of anything good coming out of Newfoundland are no longer tenable. The island is no longer a *terra incognita*. It has been explored more or less throughout its entire length and breadth,

and the summing up of all the evidence tends to shew, what I have long endeavored to prove, that its capabilities, in many respects, are of a very high order, and all that is required to put it on a footing with the other colonies is, first, roads, then legitimate—in contradistinction to illegitimate—settlement.

The diligence, courage and zeal displayed by the chiefs and assistant engineers in carrying out their instructions, and, finally, in completing a survey through a totally uninhabited wilderness of nearly three hundred and fifty miles on an air line, and that accomplished within about six months, cannot be too highly commended.

The plans and profiles drawn by the respective surveying engineers will be submitted to Mr. FLEMING for approval, who, as consulting engineer-in-chief, may perceive some modifications to be recommendable.

When these have been duly examined and approved, Mr. FLEMING will, no doubt, be prepared to give an estimate of the probable cost of construction.

The general direction of the line may be followed upon the small-scale map which accompanies this report.

ALEXANDER MURRAY.

ERRATA.

- PAGE 19—Thirteenth line from bottom, for "summt," read summit.
" " Twelfth line from top, for "Great Bear," read White Bear.
" 21—Eleventh line from bottom, for "considerable," read considerably.
" 24—Eighteenth line from top, for "coures," read courses.

